Space Weather Forecast

Issued on Monday, 15 August 2022 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storms on day 3 (17th). Chance of Moderate flares (R1-R2 Radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with occasional Common-class flares. There are currently five sunspot regions on the visible disc. Some of these are of interest displaying relatively complex magnetic structure. A Coronal Mass Ejection (CME) that occurred at 14/1200 UTC is likely to impact Earth early on day 3 (7 Aug). No other significant Earth-directed CMEs feature in the forecast.

Solar Wind / Geomagnetic Activity: The solar wind is showing a fast wind environment, with speeds remaining around 500 km/s. The total magnetic field was weak throughout with only weak variations in the important north-south component. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to remain predominantly Low, with a chance of becoming Moderate.

Solar Wind / Geomagnetic Activity: Earth is currently within a high speed stream from a coronal hole. The next coronal hole fast wind is due to arrive on day 3 (17th), with speeds of 500-600km/s probable. This enhancement is likely to be further enhanced, around the same time, by the impact of a CME which left the Sun at midday on 14th. Geomagnetic activity is expected to be mainly Quiet, with isolated Unsettled intervals during the next two days. On day 3 (17th), activity is expected to become Unsettled to Active, with a chance of minor geomagnetic storms and slight chance of a moderate geomagnetic storm.

Energetic Particles / Solar Radiation: Solar radiation storms are unlikely, but there is a slight chance of an S1 or greater event due to the more complex regions on the visible side of the solar disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	50	30
Strong	G3	No	1	1	20	5
Severe	G4	No	1	1	5	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	3	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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